It is believed that no fee is due; however, should any fees under 37 C.F.R. §§ 1.16 to 1.21 be required for any reason, the Assistant Commissioner is authorized to deduct said fees from Williams, Morgan & Amerson, P.C. Deposit Account No. 50-0786/2039.001600RFE.

Reconsideration of the application is respectfully requested.

REMARKS

1. Status of claims

Claims 99-194 are pending. A clean copy of the pending claims is attached hereto per the Examiner's request.

2. Claim rejections under obviousness-type double patenting

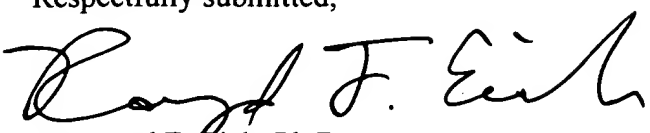
Claims 99-194 are rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-4 of Jerdee et al., U.S. Pat. No. 6,333,087 (hereinafter "Jerdee") in view of Ching et al., U.S. Pat. No. 5,859,145 (hereinafter "Ching"). Applicants present a terminal disclaimer executed by their undersigned representative, attached hereto, in order to obviate this rejection.

3. Closing remarks

In conclusion, Applicants assert all pending claims 99-194 are in condition for allowance. The Examiner is invited to contact the undersigned patent agent at (713) 934-4065 with any questions, comments or suggestions relating to the referenced patent application. The Examiner

is especially invited to contact the undersigned if the attached clean copy of the claims, terminal disclaimer, or both are lost or otherwise missing.

Respectfully submitted,



Raymund F. Eich, Ph.D.
Reg. No. 42,508

AGENT FOR APPLICANTS

WILLIAMS, MORGAN & AMERSON, P.C.
10333 Richmond, Suite 1100
Houston, Texas 77042
(713) 934-4065
(713) 934-7011 (fax)

March 17, 2003

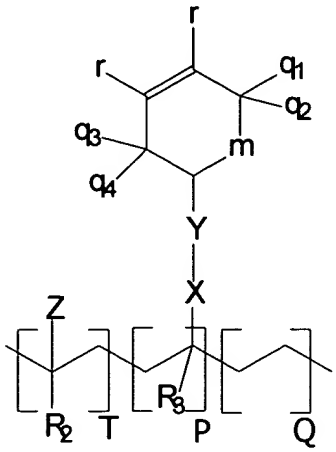
APPENDIX

Clean copy of pending claims 99-194:

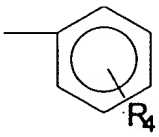
99. A compound, comprising a polymeric backbone, cyclic olefinic pendent groups and linking groups linking the olefinic pendent groups to the polymeric backbone,

wherein the polymeric backbone, linking groups and cyclic olefinic pendent groups comprise repeating units, each unit having a structure (II) as follows:

(II)



wherein P+T+ Q is 100 mol % of the total composition; P, T, and Q are each greater than 0 mol % of the total composition; Z is selected from the group consisting of an aryl group; $-(C=O)OR_1$; $-O(C=O)R_1$; and an alkyl aryl group:



where R_4 is selected from the group consisting of $-CH_3$, ethyl, and hydrogen; R_1 is selected from the group consisting of hydrogen, methyl, ethyl, $-C_3H_7$ and $-C_4H_9$; R_2 and R_3 are selected from the group consisting of hydrogen and methyl; X is selected from the group consisting of -O-, -NH-, -(C=O)O-, -(C=O)NH-, -(C=O)S-, -O(C=O)- and $-(CHR)_L-$; L is an integer in the range from 1 to 6; Y is $-(CHR)_n-$, where n is an integer in the range from 0 to 12, R being selected from the group consisting of hydrogen, methyl and ethyl; where q_1, q_2, q_3, q_4, and

r are selected from the group consisting of hydrogen, methyl, and ethyl; and where m is $-(CH_2)_n-$ and where n is an integer in the range from 0 to 4; and wherein when r is hydrogen, at least one of q_1, q_2, q_3 and q_4 is hydrogen.

100. The compound of claim 99, wherein the polymeric backbone comprises monomers selected from the group consisting of ethylene and styrene.

101. The compound of claim 99, wherein the cyclic olefinic pendent groups are grafted onto the linking groups of the polymeric backbone by an esterification, transesterification, amidation or transamidation reaction.

102. The compound of claim 101, wherein the esterification, transesterification, amidation or transamidation reaction is a solution reaction or a reactive extrusion.

103. The compound of claim 101, wherein the esterification, transesterification, amidation or transamidation reaction is catalyzed by a catalyst selected from the group consisting of strong non-oxidizing acids, tertiary amines, Group I alkoxides, Group IVB alkoxides, and Group IVA organometallics.

104. The compound of claim 103, wherein the catalyst is selected from a group consisting of toluene sulfonic acid, sodium methoxide, tetrabutyl titanate, tetraisopropyl titanate, tetra-n-propyl-titanate, tetraethyl titanate, 2-hydroxy-pyridine and dibutyltin dilaurate.

105. The compound of claim 99, wherein the cyclic olefinic pendent groups are selected from the group consisting of cyclohexene-4-methylene radical, 1-methyl cyclohexene-4-methylene radical, 2-methyl cyclohexene-4-methylene radical, 5-methyl cyclohexene-4-methylene radical, 1,2-dimethyl cyclohexene-4-methylene radical, 1,5-dimethyl cyclohexene-4-methylene radical, 2,5-dimethyl cyclohexene-4-methylene radical, 1,2,5-trimethyl cyclohexene-4-methylene radical, cyclohexene-4-ethylene radical, 1-methyl cyclohexene-4-ethylene radical, 2-methyl cyclohexene-4-ethylene radical, 5-methyl cyclohexene-4-ethylene radical, 1,2-dimethyl cyclohexene-4-ethylene radical, 1,5-dimethyl cyclohexene-4-ethylene radical, 2,5-dimethyl

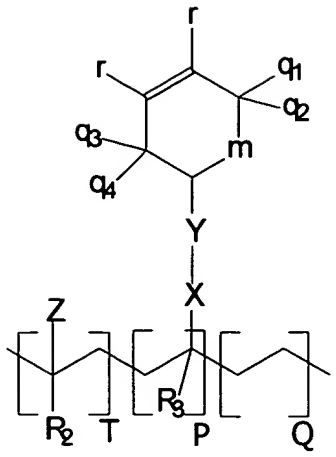
cyclohexene-4-ethylene radical, 1,2,5-trimethyl cyclohexene-4-ethylene radical, cyclohexene-4-propylene radical, 1-methyl cyclohexene-4-propylene radical, 2-methyl cyclohexene-4-propylene radical, 5-methyl cyclohexene-4-propylene radical, 1,2-dimethyl cyclohexene-4-propylene radical, 1,5-dimethyl cyclohexene-4-propylene radical, 2,5-dimethyl cyclohexene-4-propylene radical, 1,2,5-trimethyl cyclohexene-4-propylene radical, cyclopentene-4-methylene radical, 1-methyl cyclopentene-4-methylene radical, 3-methyl cyclopentene-4-methylene radical, 1,2-dimethyl cyclopentene-4-methylene radical, 3,5-dimethyl cyclopentene-4-methylene radical, 1,3-dimethyl cyclopentene-4-methylene radical, 2,3-dimethyl cyclopentene-4-methylene radical, 1,2,3-trimethyl cyclopentene-4-methylene radical, 1,2,3,5-tetramethyl cyclopentene-4-methylene radical, cyclopentene-4-ethylene radical, 1-methyl cyclopentene-4-ethylene radical, 3-methyl cyclopentene-4-ethylene radical, 1,2-dimethyl cyclopentene-4-ethylene radical, 3,5-dimethyl cyclopentene-4-ethylene radical, 1,3-dimethyl cyclopentene-4-ethylene radical, 2,3-dimethyl cyclopentene-4-ethylene radical, 1,2,3-trimethyl cyclopentene-4-ethylene radical, 1,2,3,5-tetramethyl cyclopentene-4-ethylene radical, cyclopentene-4-propylene radical, 1-methyl cyclopentene-4-propylene radical, 3-methyl cyclopentene-4-propylene radical, 1,2-dimethyl cyclopentene-4-propylene radical, 3,5-dimethyl cyclopentene-4-propylene radical, 1,3-dimethyl cyclopentene-4-propylene radical, 2,3-dimethyl cyclopentene-4-propylene radical, 1,2,3-trimethyl cyclopentene-4-propylene radical, and 1,2,3,5-tetramethyl cyclopentene-4-propylene radical.

106. The compound of claim 99, wherein the compound is an ethylene/methyl acrylate/cyclohexenyl methyl acrylate terpolymer.

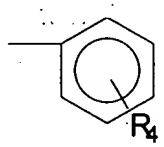
107. An oxygen scavenging composition, comprising a compound comprising a polymeric backbone, cyclic olefinic pendent groups, and linking groups linking the olefinic pendent groups to the polymeric backbone, and a transition metal catalyst;

wherein the transition metal catalyst is a metal salt, and wherein the polymeric backbone, linking groups and cyclic olefinic pendent groups comprise repeating units, each unit having a structure (II) as follows:

(II)



wherein P+T+ Q is 100 mol % of the total composition; P, T, and Q are each greater than 0 mol % of the total composition; Z is selected from the group consisting of an aryl group; $-(C=O)OR_1$; $-O(C=O)R_1$; and an alkyl aryl group:



where R_4 is selected from the group consisting of $-CH_3$, ethyl, and hydrogen; R_1 is selected from the group consisting of hydrogen, methyl, ethyl, $-C_3H_7$ and $-C_4H_9$; R_2 and R_3 are selected from the group consisting of hydrogen and methyl; X is selected from the group consisting of -O-, -NH-, -(C=O)O-, -(C=O)NH-, -(C=O)S-, -O(C=O)- and $-(CHR)_L-$; L is an integer in the range from 1 to 6; Y is $-(CHR)_n-$, where n is an integer in the range from 0 to 12, R being selected from the group consisting of hydrogen, methyl and ethyl; where q_1, q_2, q_3, q_4, and r are selected from the group consisting of hydrogen, methyl, and ethyl; and where m is $-(CH_2)_n-$ and where n is an integer in the range from 0 to 4; and wherein when r is hydrogen, at least one of q_1, q_2, q_3 and q_4 is hydrogen.

108. A composition according to claim 107, wherein the polymeric backbone is ethylenic and the linking groups are selected from the group consisting of:

$-O-(CHR)_n-$; $-(C=O)-O-(CHR)_n-$; $-NH-(CHR)_n-$; $-O-(C=O)-(CHR)_n-$;

-(C=O)-NH-(-CHR)$_n$-; and -(C=O)-O-CHOH-CH_2-O-;

wherein R is hydrogen or an alkyl group selected from the group consisting of methyl, ethyl, propyl and butyl groups and where n is an integer in the range from 1 to 12.

109. The composition of claim 107, wherein the polymeric backbone comprises monomers selected from the group consisting of ethylene and styrene.

110. The composition of claim 107, wherein the cyclic olefinic pendent groups are grafted onto the linking groups of the polymeric backbone by a esterification, transesterification, amidation or transamidation reaction.

111. The composition of claim 110, wherein the esterification, transesterification, amidation or transamidation reaction is a solution reaction or a reactive extrusion.

112. The composition of claim 110, wherein the esterification, transesterification, amidation or transamidation reaction is catalyzed by a catalyst selected from the group consisting of strong non-oxidizing acids, tertiary amines, Group I alkoxides, Group IVB alkoxides, and Group IVA organometallics.

113. The composition of claim 112, wherein the catalyst is selected from a group consisting of toluene sulfonic acid, sodium methoxide, tetrabutyl titanate, tetraisopropyl titanate, tetra-n-propyl-titanate, tetraethyl titanate, 2-hydroxy-pyridine and dibutyltin dilaurate.

114. The composition of claim 107, wherein the cyclic olefinic pendent groups are selected from the group consisting of cyclohexene-4-methylene radical, 1-methyl cyclohexene-4-methylene radical, 2-methyl cyclohexene-4-methylene radical, 5-methyl cyclohexene-4-methylene radical, 1,2-dimethyl cyclohexene-4-methylene radical, 1,5-dimethyl cyclohexene-4-methylene radical, 2,5-dimethyl cyclohexene-4-methylene radical, 1,2,5-trimethyl cyclohexene-4-methylene radical, cyclohexene-4-ethylene radical, 1-methyl cyclohexene-4-ethylene radical, 2-methyl cyclohexene-4-ethylene radical, 5-methyl cyclohexene-4-ethylene radical, 1,2-dimethyl cyclohexene-4-ethylene radical, 1,5-dimethyl cyclohexene-4-ethylene radical, 2,5-dimethyl

cyclohexene-4-ethylene radical, 1,2,5-trimethyl cyclohexene-4-ethylene radical, cyclohexene-4-propylene radical, 1-methyl cyclohexene-4-propylene radical, 2-methyl cyclohexene-4-propylene radical, 5-methyl cyclohexene-4-propylene radical, 1,2-dimethyl cyclohexene-4-propylene radical, 1,5-dimethyl cyclohexene-4-propylene radical, 2,5-dimethyl cyclohexene-4-propylene radical, 1,2,5-trimethyl cyclohexene-4-propylene radical, cyclopentene-4-methylene radical, 1-methyl cyclopentene-4-methylene radical, 3-methyl cyclopentene-4-methylene radical, 1,2-dimethyl cyclopentene-4-methylene radical, 3,5-dimethyl cyclopentene-4-methylene radical, 1,3-dimethyl cyclopentene-4-methylene radical, 2,3-dimethyl cyclopentene-4-methylene radical, 1,2,3-trimethyl cyclopentene-4-methylene radical, 1,2,3,5-tetramethyl cyclopentene-4-methylene radical, cyclopentene-4-ethylene radical, 1-methyl cyclopentene-4-ethylene radical, 3-methyl cyclopentene-4-ethylene radical, 1,2-dimethyl cyclopentene-4-ethylene radical, 3,5-dimethyl cyclopentene-4-ethylene radical, 1,3-dimethyl cyclopentene-4-ethylene radical, 2,3-dimethyl cyclopentene-4-ethylene radical, 1,2,3-trimethyl cyclopentene-4-ethylene radical, 1,2,3,5-tetramethyl cyclopentene-4-ethylene radical, cyclopentene-4-propylene radical, 1-methyl cyclopentene-4-propylene radical, 3-methyl cyclopentene-4-propylene radical, 1,2-dimethyl cyclopentene-4-propylene radical, 3,5-dimethyl cyclopentene-4-propylene radical, 1,3-dimethyl cyclopentene-4-propylene radical, 2,3-dimethyl cyclopentene-4-propylene radical, 1,2,3-trimethyl cyclopentene-4-propylene radical, and 1,2,3,5-tetramethyl cyclopentene-4-propylene radical.

115. The composition of claim 107, wherein the compound is an ethylene/methyl acrylate/cyclohexenyl methyl acrylate terpolymer.

116. The composition of claim 107, wherein odor and taste characteristics of products packaged with material comprised of the composition are not adulterated as a result of oxidation of the composition.

117. The composition of claim 107, wherein there is no significant fragmentation of the olefinic pendent groups and linking groups from the polymeric backbone as a result of oxidation of the composition.

118. The composition of claim 107, wherein the metal in the metal salt is cobalt.

119. The composition according to claim 118, wherein the metal salt is selected from the group consisting of cobalt neodecanoate, cobalt 2-ethylhexanoate, cobalt oleate and cobalt stearate.

120. The composition of claim 107, further comprising at least one triggering material to enhance initiation of oxygen scavenging.

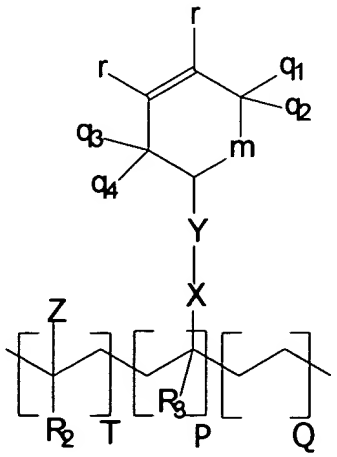
121. The composition of claim 119, wherein the triggering material is a photo initiator.

122. An article of manufacture suitable as a container, the container inhibiting oxidation of contents of the container by removing oxygen from the container and by inhibiting ingress of oxygen into the container from outside the container,

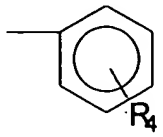
wherein the article comprises an oxygen scavenging composition which comprises:

(a) a compound comprising a polymeric backbone, cyclic olefinic pendant groups, and linking groups linking the olefinic pendant groups to the backbone, wherein the polymeric backbone, linking groups and cyclic olefinic pendent groups comprise repeating units, each unit having a structure (II) as follows:

(II)



wherein P+T+ Q is 100 mol % of the total composition; P, T, and Q are each greater than 0 mol % of the total composition; Z is selected from the group consisting of an aryl group; $-(C=O)OR_1$; $-O(C=O)R_1$; and an alkyl aryl group:



where R_4 is selected from the group consisting of $-CH_3$, ethyl, and hydrogen; R_1 is selected from the group consisting of hydrogen, methyl, ethyl, $-C_3H_7$ and $-C_4H_9$; R_2 and R_3 are selected from the group consisting of hydrogen and methyl; X is selected from the group consisting of -O-, -NH-, -(C=O)O-, -(C=O)NH-, -(C=O)S-, -O(C=O)- and $-(CHR)_L-$; L is an integer in the range from 1 to 6; Y is $-(CHR)_n-$, where n is an integer in the range from 0 to 12, R being selected from the group consisting of hydrogen, methyl and ethyl; where q_1, q_2, q_3, q_4, and r are selected from the group consisting of hydrogen, methyl, and ethyl; and where m is $-(CH_2)_n-$ and where n is an integer in the range from 0 to 4; and wherein when r is hydrogen, at least one of q_1, q_2, q_3 and q_4 is hydrogen; and

(b) a transition metal catalyst.

123. The article of manufacture of claim 122, wherein the polymeric backbone is ethylenic and the linking groups are selected from the group consisting of:

$-O-(CHR)_n-$; $-(C=O)-O-(CHR)_n-$; $-NH-(CHR)_n-$; $-O-(C=O)-(CHR)_n-$;

$-(C=O)-NH-(-CHR)_n-$; and $-(C=O)-O-CHOH-CH_2-O-$;

wherein R is hydrogen or an alkyl group selected from the group consisting of methyl, ethyl, propyl and butyl groups and where n is an integer in the range from 1 to 12.

124. The article of manufacture of claim 122, wherein the polymeric backbone comprises monomers selected from the group consisting of ethylene and styrene.

125. The article of manufacture of claim 122, wherein the cyclic olefinic pendent groups are grafted onto the linking groups of the polymeric backbone by a esterification, transesterification, amidation or transamidation reaction.

126. The article of manufacture of claim 125, wherein the esterification, transesterification, amidation or transamidation reaction is a solution reaction or a reactive extrusion.

127. The article of manufacture of claim 125, wherein the esterification, transesterification, amidation or transamidation reaction is catalyzed by a catalyst selected from the group consisting of strong non-oxidizing acids, tertiary amines, Group I alkoxides, Group IVB alkoxides, and Group IVA organometallics.

128. The article of manufacture of claim 127, wherein the catalyst is selected from the group consisting of toluene sulfonic acid, sodium methoxide, tetrabutyl titanate, tetraisopropyl titanate, tetra-n-propyl-titanate, tetraethyl titanate, 2-hydroxy-pyridine and dibutyltin dilaurate.

129. The article of manufacture of claim 122, wherein the cyclic olefinic pendent groups are selected from the group consisting of cyclohexene-4-methylene radical, 1-methyl cyclohexene-4-methylene radical, 2-methyl cyclohexene-4-methylene radical, 5-methyl cyclohexene-4-methylene radical, 1,2-dimethyl cyclohexene-4-methylene radical, 1,5-dimethyl cyclohexene-4-methylene radical, 2,5-dimethyl cyclohexene-4-methylene radical, 1,2,5-trimethyl cyclohexene-4-methylene radical, cyclohexene-4-ethylene radical, 1-methyl cyclohexene-4-ethylene radical, 2-methyl cyclohexene-4-ethylene radical, 5-methyl cyclohexene-4-ethylene radical, 1,2-dimethyl cyclohexene-4-ethylene radical, 1,5-dimethyl cyclohexene-4-ethylene radical, 2,5-dimethyl cyclohexene-4-ethylene radical, 1,2,5-trimethyl cyclohexene-4-ethylene radical, cyclohexene-4-propylene radical, 1-methyl cyclohexene-4-propylene radical, 2-methyl cyclohexene-4-propylene radical, 5-methyl cyclohexene-4-propylene radical, 1,2-dimethyl cyclohexene-4-propylene radical, 1,5-dimethyl cyclohexene-4-propylene radical, 2,5-dimethyl cyclohexene-4-propylene radical, 1,2,5-trimethyl cyclohexene-4-propylene radical, cyclopentene-4-methylene radical, 1-methyl cyclopentene-4-methylene radical, 3-methyl cyclopentene-4-methylene radical, 1,2-dimethyl cyclopentene-4-methylene radical, 3,5-dimethyl cyclopentene-4-methylene radical, 1,3-dimethyl cyclopentene-4-methylene radical, 2,3-dimethyl cyclopentene-4-methylene radical, 1,2,3-trimethyl cyclopentene-4-methylene radical, 1,2,3,5-tetramethyl cyclopentene-4-methylene radical, cyclopentene-4-ethylene radical, 1-methyl cyclopentene-4-ethylene radical, 3-methyl

cyclopentene-4-ethylene radical, 1,2-dimethyl cyclopentene-4-ethylene radical, 3,5-dimethyl cyclopentene-4-ethylene radical, 1,3-dimethyl cyclopentene-4-ethylene radical, 2,3-dimethyl cyclopentene-4-ethylene radical, 1,2,3-trimethyl cyclopentene-4-ethylene radical, 1,2,3,5-tetramethyl cyclopentene-4-ethylene radical, cyclopentene-4-propylene radical, 1-methyl cyclopentene-4-propylene radical, 3-methyl cyclopentene-4-propylene radical, 1,2-dimethyl cyclopentene-4-propylene radical, 3,5-dimethyl cyclopentene-4-propylene radical, 1,3-dimethyl cyclopentene-4-propylene radical, 2,3-dimethyl cyclopentene-4-propylene radical, 1,2,3-trimethyl cyclopentene-4-propylene radical, and 1,2,3,5-tetramethyl cyclopentene-4-propylene radical.

130. The article of manufacture of claim 122, wherein the compound is an ethylene/methyl acrylate/cyclohexenyl methyl acrylate terpolymer.

131. The article of manufacture according to claim 122, wherein the transition metal catalyst is a metal salt.

132. The article of manufacture according to claim 131, wherein the metal in the metal salt is cobalt.

133. The article of manufacture of according to claim 132, wherein the metal salt is selected from the group consisting of cobalt neodecanoate, cobalt 2-ethylhexanoate, cobalt oleate and cobalt stearate.

134. The article of manufacture of claim 122, further comprising at least one triggering material to enhance initiation of oxygen scavenging.

135. The article of manufacture of claim 134, wherein the triggering material is a photoinitiator.

136. The article of manufacture of claim 122, wherein odor and taste characteristics of products packaged with material comprised of the composition are not adulterated as a result of oxidation of the composition.

137. The article of manufacture of claim 122, wherein there is no significant fragmentation of the olefinic pendent groups and linking groups from the polymeric backbone as a result of oxidation of the composition.

138. The article of manufacture of claim 122 wherein the article is a package.

139. The article of manufacture of claim 138, wherein the package comprises a flexible film having a thickness of at most 10 mil or a flexible sheet having a thickness of at least 10 mil.

140. The article of manufacture of claim 138, wherein the oxygen scavenging system of the package comprises at least one additional layer selected from among oxygen barrier layers, polymeric selective layers, and heat seal layers.

141. The article of manufacture of claim 138, wherein the article is a package with a food product located within the package.

142. The article of manufacture of claim 138, wherein the article is a package for packaging a cosmetic, chemical, electronic device, pesticide or a pharmaceutical composition.

143. A multi-layer film comprising the article of manufacture according to claim 122, and at least one additional functional layer.

144. The multi-layer film according to claim 143, wherein at least one additional layer is selected from among oxygen barrier layers, polymeric selective barrier layers, structural layers and heat seal layers.

145. The multi-layer film according to claim 143, wherein the at least one additional layer is an oxygen barrier layer.

146. The multi-layer film according to claim 145, further comprising at least one polymeric selective barrier layer.

147. The multi-layer film according to claim 145, further comprising at least one heat seal layer.

148. The multi-layer film according to claim 145, further comprising at least one structural layer.

149. The article of claim 122, wherein the article is a rigid container, sealing gasket, patch, container closure device, bottle cap, bottle cap insert or molded or thermoformed shape.

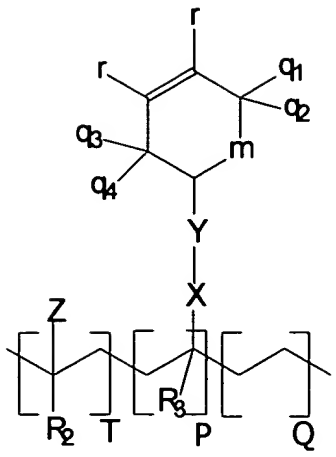
150. The article of claim 149, wherein the molded or thermoformed shape is a bottle or tray.

151. A layer suitable for scavenging oxygen, comprising:

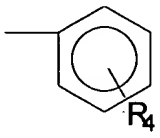
(a) a compound comprising a polymeric backbone, cyclic olefinic pendent groups and linking groups linking the olefinic pendent groups to the polymeric backbone,

wherein the polymeric backbone, linking groups and cyclic olefinic pendent groups comprise repeating units, each unit having a structure (II) as follows:

(II)



wherein P+T+ Q is 100 mol % of the total composition; P, T, and Q are each greater than 0 mol % of the total composition; Z is selected from the group consisting of an aryl group; $-(C=O)OR_1$; $-O(C=O)R_1$; and an alkyl aryl group:



where R_4 is selected from the group consisting of $-CH_3$, ethyl, and hydrogen; R_1 is selected from the group consisting of hydrogen, methyl, ethyl, $-C_3H_7$ and $-C_4H_9$; R_2 and R_3 are selected from the group consisting of hydrogen and methyl; X is selected from the group consisting of -O-, -NH-, -(C=O)O-, -(C=O)NH-, -(C=O)S-, -O(C=O)- and $-(CHR)_L-$; L is an integer in the range from 1 to 6; Y is $-(CHR)_n-$, where n is an integer in the range from 0 to 12, R being selected from the group consisting of hydrogen, methyl and ethyl; where q_1, q_2, q_3, q_4, and r are selected from the group consisting of hydrogen, methyl, and ethyl; and where m is $-(CH_2)_n-$ and where n is an integer in the range from 0 to 4; and wherein when r is hydrogen, at least one of q_1, q_2, q_3 and q_4 is hydrogen; and

(b) a transition metal catalyst.

152. The layer of claim 151, wherein odor and taste characteristics of products packaged with material comprised of the layer are not adulterated as a result of oxidation of the layer.

153. The layer of claim 151, wherein there is no significant fragmentation of the olefinic pendent groups and linking groups from the polymeric backbone as a result of oxidation of the layer.

154. A layer according to claim 151, wherein the transition metal catalyst is a metal salt.

155. A layer according to claim 154, wherein the transition metal in the metal salt is cobalt.

156. A layer according to claim 154, wherein the metal salt selected from the group consisting of cobalt neodecanoate, cobalt 2-ethylhexanoate, cobalt oleate and cobalt stearate.

157. A layer according to claim 151, wherein said layer in addition comprises polymeric diluent.

158. A layer according to claim 157, wherein said diluent is a thermoplastic polymer.

159. A layer according to claim 151, wherein said layer is adjacent to one or more additional layers.

160. A layer according to claim 159, wherein at least one additional layer is an oxygen barrier.

161. A layer according to claim 160, wherein said oxygen barrier comprises at least one material selected from the group consisting of poly(ethylene-vinyl alcohol), polyacrylonitrile, poly(vinyl chloride), polyamides, poly(vinylidene dichloride), poly(ethylene terephthalate), silica, metal foil and metalized polymeric films.

162. A layer according to claim 159, wherein one or more of said additional layer or layers is coextruded with said layer.

163. A layer according to claim 159, wherein one or more of said additional layer or layers is laminated onto said layer.

164. A layer according to claim 159, wherein one or more of said additional layer or layers is coated onto said layer.

165. A layer according to claim 159, wherein said layer is flexible.

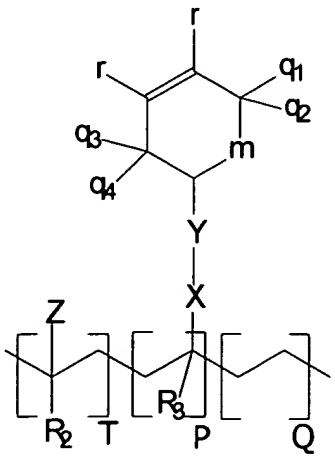
166. A layer according to claim 159, wherein said layer is transparent.

167. An article for packaging wherein the article comprises a layer according to claim 151.

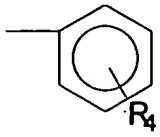
168. A process of making a polymer material by a process comprising transesterification of an ethylene copolymer with an alcohol comprising a cyclic olefinic group, wherein the polymer material that is produced comprises a polymer backbone, cyclic olefinic pendant groups, and linking groups linking the backbone with the pendant groups;

wherein the polymeric backbone, linking groups and cyclic olefinic pendent groups comprise repeating units, each unit having a structure (II) as follows:

(II)



wherein P+T+ Q is 100 mol % of the total composition; P, T, and Q are each greater than 0 mol % of the total composition; Z is selected from the group consisting of an aryl group; $-(C=O)OR_1$; $-O(C=O)R_1$; and an alkyl aryl group:



where R_4 is selected from the group consisting of $-CH_3$, ethyl, and hydrogen; R_1 is selected from the group consisting of hydrogen, methyl, ethyl, $-C_3H_7$ and $-C_4H_9$; R_2 and R_3 are selected from the group consisting of hydrogen and methyl; X is selected from the group consisting of -O-, -NH-, -(C=O)O-, -(C=O)NH-, -(C=O)S-, -O(C=O)- and $-(CHR)_L-$; L is an integer in the range from 1 to 6; Y is $-(CHR)_n-$, where n is an integer in the range from 0 to 12, R being selected from the group consisting of hydrogen, methyl and ethyl; where q_1, q_2, q_3, q_4, and r are selected from the group consisting of hydrogen, methyl, and ethyl; and where m is $-(CH_2)_n-$ and where n is an integer in the range from 0 to 4; and wherein when r is hydrogen, at least one of q_1, q_2, q_3 and q_4 is hydrogen.

169. The process of claim 168, wherein the process comprises the steps of:

(a) selecting at least one polymer from the group consisting of ethylene/maleic anhydride, ethylene/acrylic acid, ethylene/methacrylic acid, ethylene/methyl acrylate, ethylene/ethyl acrylate, and ethylene/butyl acrylate, and at least one transesterifying compound selected from the group consisting of cyclohexene-4-methanol, 1-methyl cyclohexene-4-methanol, 2-methyl cyclohexene-4-methanol, 5-methyl cyclohexene-4-methanol, 1,2-dimethyl cyclohexene-4-methanol, 1,5-dimethyl cyclohexene-4-methanol, 2,5-dimethyl cyclohexene-4-methanol, 1,2,5-trimethyl cyclohexene-4-methanol, cyclohexene-4-ethanol, 1-methyl cyclohexene-4-ethanol, 2-methyl cyclohexene-4-ethanol, 5-methyl cyclohexene-4-ethanol, 1,2-dimethyl cyclohexene-4-ethanol, 1,5-dimethyl cyclohexene-4-ethanol, 2,5-dimethyl cyclohexene-4-ethanol, 1,2,5-trimethyl cyclohexene-4-ethanol, cyclohexene-4-propanol, 1-methyl cyclohexene-4-propanol, 2-methyl

cyclohexene-4-propanol, 5-methyl cyclohexene-4-propanol, 1,2-dimethyl cyclohexene-4-propanol, 1,5-dimethyl cyclohexene-4-propanol, 2,5-dimethyl cyclohexene-4-propanol, 1,2,5-trimethyl cyclohexene-4-propanol, cyclopentene-4-methanol, 1-methyl cyclopentene-4-methanol, 3-methyl cyclopentene-4-methanol, 1,2-dimethyl cyclopentene-4-methanol, 3,5-dimethyl cyclopentene-4-methanol, 1,3-dimethyl cyclopentene-4-methanol, 2,3-dimethyl cyclopentene-4-methanol, 1,2,3-trimethyl cyclopentene-4-methanol, 1,2,3,5-tetramethyl cyclopentene-4-methanol, cyclopentene-4-ethanol, 1-methyl cyclopentene-4-ethanol, 3-methyl cyclopentene-4-ethanol, 1,2-dimethyl cyclopentene-4-ethanol, 3,5-dimethyl cyclopentene-4-ethanol, 1,3-dimethyl cyclopentene-4-ethanol, 2,3-dimethyl cyclopentene-4-ethanol, 1,2,3-trimethyl cyclopentene-4-ethanol, 1,2,3,5-tetramethyl cyclopentene-4-ethanol, cyclopentene-4-propanol, 1-methyl cyclopentene-4-propanol, 3-methyl cyclopentene-4-propanol, 1,2-dimethyl cyclopentene-4-propanol, 3,5-dimethyl cyclopentene-4-propanol, 1,3-dimethyl cyclopentene-4-propanol, 2,3-dimethyl cyclopentene-4-propanol, 1,2,3-trimethyl cyclopentene-4-propanol, and 1,2,3,5-tetramethyl cyclopentene-4-propanol, and combining the at least one polymer and the at least one transesterifying compound;

(b) heating the polymer and transesterifying compound selected in (a) to form a polymer melt;

(c) processing the melt in an extruder under transesterification conditions with transesterification catalysts and antioxidants protecting the melt from oxidation during extrusion, so that the polymer melt undergoes exchange of alkyl groups of polymeric esters with cyclic olefin pendent groups; and

(d) removing volatile organic products and by-products from the melt.

170. The process of claim 169, wherein the polymeric backbone is ethylenic and the linking groups are selected from the group consisting of:

$-O-(CHR)_n-$; $-(C=O)-O-(CHR)_n-$; $-NH-(CHR)_n-$;
$-O-(C=O)-(CHR)_n-$; $-(C=O)-NH-(-CHR)_n-$; and $-(C=O)-O-CHOH-CH_2-O-$;

where R is hydrogen or an alkyl group selected from the group consisting of methyl, ethyl, propyl and butyl groups and where n is an integer in the range from 1 to 12.

171. The process of claim 169, wherein the polymeric backbone is ethylenic backbone and the linking group is:

$$-(C=O)-NH-(CHR)_n$$

where R is hydrogen or an alkyl group selected from the group consisting of methyl, ethyl, propyl and butyl groups and where n is an integer in the range from 1 to 12.

172. The process of claim 168, further comprising adding to the polymer material a transition metal catalyst.

173. The process of claim 172, wherein the transition metal catalyst is a metal salt.

174. The process of claim 173, wherein the metal in the metal salt is cobalt.

175. The process of claim 173, wherein the metal salt is selected from the group consisting of cobalt neodecanoate, cobalt 2-ethylhexanoate, cobalt oleate and cobalt stearate.

176. The process of claim 168, further comprising adding to the polymer material at least one triggering material to enhance initiation of oxygen scavenging.

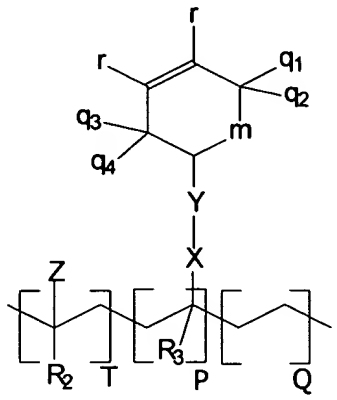
177. The process of claim 176, wherein the triggering material is a photoinitiator.

178. The process of claim 168, wherein the reaction is a solution reaction or a reactive extrusion.

179. The process of claim 168, wherein the transesterification reaction is catalyzed by a catalyst selected from the group consisting of strong non-oxidizing acids, tertiary amines, Group I alkoxides, Group IVB alkoxides, Group IVA organometallics.

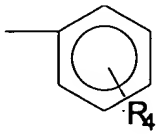
180. The process of claim 179, wherein the catalyst is selected from the group consisting of toluene sulfonic acid, sodium methoxide, tetrabutyl titanate, tetraisopropyl titanate, tetra-n-propyl-titanate, tetraethyl titanate, 2-hydroxy-pyridine and dibutyltin dilaurate.

181. The process of claim 168, wherein the backbone, linking groups and cyclic olefin pendent groups comprise repeating units, each unit having a structure (II) as follows:



(II)

wherein P + T + Q is 100 mol % of the total composition; P, T, and Q are each greater than 0; Z is selected from the group consisting of an aryl group, -(C=O)OR_1, -O(C=O)R_1 and an alkyl aryl group:



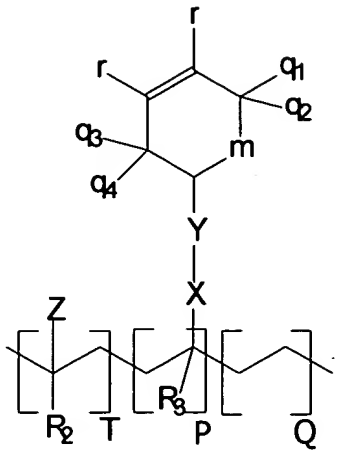
where R_4 is selected from the group consisting of –H, -CH_3 and -C_2H_5; R_1 is selected from the group consisting of -H, -CH_3, -C_2H_5, -C_3H_5 and -C_4H_7; R_2 and R_3 is selected from the group consisting of -H and CH_3; X is selected from the group consisting of O-, -NH-, -(C=O)O-, -(C=O)NH-, -(C=O)S-, -O(C=O)- and –$(CHR)_L$-; L is an integer selected from the group consisting of 1, 2, 3, 4, 5 and 6; Y is -$(CHR)_n$-, where n is an integer in the range from 0 to 12 where R is selected from the group consisting of –H, -CH_3 and -C_2H_5; where q_1, q_2, q_3, q_4, and r are selected from the group consisting of -H, -CH_3, and -C_2H_5; and where m is -$(CH_2)_n$- and

where n is an integer in the range of from 0 to 4; and wherein when r is –H, at least one of q_1, q_2, q_3 and q_4 is -H.

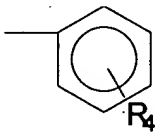
182. The process of claim 168, wherein the cyclic olefinic pendent groups are selected from the group consisting of cyclohexene-4-methylene radical, 1-methyl cyclohexene-4-methylene radical, 2-methyl cyclohexene-4-methylene radical, 5-methyl cyclohexene-4-methylene radical, 1,2-dimethyl cyclohexene-4-methylene radical, 1,5-dimethyl cyclohexene-4-methylene radical, 2,5-dimethyl cyclohexene-4-methylene radical, 1,2,5-trimethyl cyclohexene-4-methylene radical, cyclohexene-4-ethylene radical, 1-methyl cyclohexene-4-ethylene radical, 2-methyl cyclohexene-4-ethylene radical, 5-methyl cyclohexene-4-ethylene radical, 1,2-dimethyl cyclohexene-4-ethylene radical, 1,5-dimethyl cyclohexene-4-ethylene radical, 2,5-dimethyl cyclohexene-4-ethylene radical, 1,2,5-trimethyl cyclohexene-4-ethylene radical, cyclohexene-4-propylene radical, 1-methyl cyclohexene-4-propylene radical, 2-methyl cyclohexene-4-propylene radical, 5-methyl cyclohexene-4-propylene radical, 1,2-dimethyl cyclohexene-4-propylene radical, 1,5-dimethyl cyclohexene-4-propylene radical, 2,5-dimethyl cyclohexene-4-propylene radical, 1,2,5-trimethyl cyclohexene-4-propylene radical, cyclopentene-4-methylene radical, 1-methyl cyclopentene-4-methylene radical, 3-methyl cyclopentene-4-methylene radical, 1,2-dimethyl cyclopentene-4-methylene radical, 3,5-dimethyl cyclopentene-4-methylene radical, 1,3-dimethyl cyclopentene-4-methylene radical, 2,3-dimethyl cyclopentene-4-methylene radical, 1,2,3-trimethyl cyclopentene-4-methylene radical, 1,2,3,5-tetramethyl cyclopentene-4-methylene radical, cyclopentene-4-ethylene radical, 1-methyl cyclopentene-4-ethylene radical, 3-methyl cyclopentene-4-ethylene radical, 1,2-dimethyl cyclopentene-4-ethylene radical, 3,5-dimethyl cyclopentene-4-ethylene radical, 1,3-dimethyl cyclopentene-4-ethylene radical, 2,3-dimethyl cyclopentene-4-ethylene radical, 1,2,3-trimethyl cyclopentene-4-ethylene radical, 1,2,3,5-tetramethyl cyclopentene-4-ethylene radical, cyclopentene-4-propylene radical, 1-methyl cyclopentene-4-propylene radical, 3-methyl cyclopentene-4-propylene radical, 1,2-dimethyl cyclopentene-4-propylene radical, 3,5-dimethyl cyclopentene-4-propylene radical, 1,3-dimethyl cyclopentene-4-propylene radical, 2,3-dimethyl cyclopentene-4-propylene radical, 1,2,3-trimethyl cyclopentene-4-propylene radical, and 1,2,3,5-tetramethyl cyclopentene-4-propylene radical.

183. The process of claim 78, wherein the polymer is a ethylene/methyl acrylate/cyclohexenyl methyl acrylate terpolymer.

184. A polymer comprising the formula:



wherein P+T+ Q is 100 mol % of the total composition; P, T, and Q are each greater than 0 mol % of the total composition; Z is selected from the group consisting of an aryl group; $-(C=O)OR_1$; $-O(C=O)R_1$; and an alkyl aryl group:



where R_4 is selected from the group consisting of $-CH_3$, ethyl, and hydrogen; R_1 is selected from the group consisting of hydrogen, methyl, ethyl, $-C_3H_7$ and $-C_4H_9$; R_2 and R_3 are selected from the group consisting of hydrogen and methyl; X is selected from the group consisting of -O-, -NH-, -(C=O)O-, -(C=O)NH-, -(C=O)S-, -O(C=O)- and $-(CHR)_L-$; L is an integer in the range from 1 to 6; Y is $-(CHR)_n-$, where n is an integer in the range from 0 to 12, R being selected from the group consisting of hydrogen, methyl and ethyl; where q_1, q_2, q_3, q_4, and r are selected from the group consisting of hydrogen, methyl, and ethyl; and where m is $-(CH_2)_n-$ and where n is an integer in the range from 0 to 4; and wherein when r is hydrogen, at least one of q_1, q_2, q_3 and q_4 is hydrogen.

185. Poly(ethylene/methyl acrylate/cyclohexene-methylacrylate).

186. A process for making a terpolymer, comprising transesterification of ethylene methyl acrylate copolymer with an alcohol comprising a cyclohexene moiety.

187. The process of claim 186, wherein the alcohol is 3-cyclohexene-1-methanol.

188. The process of claim 186, wherein the transesterification occurs in a reactive extrusion process.

189. A terpolymer prepared by transesterification of ethylene methyl acrylate copolymer with an alcohol comprising a cyclohexene moiety.

190. The terpolymer of claim 189, wherein the alcohol is 3-cyclohexene-1-methanol.

191. A composition comprising poly(ethylene/methyl acrylate/cyclohexene-methylacrylate) and an amount of a transition metal catalyst effective to catalyze oxygen scavenging.

192. An oxygen scavenging layer comprising poly(ethylene/methylacrylate/ cyclohexene-methylacrylate) and an amount of a transition metal catalyst effective to catalyze oxygen scavenging.

193. A film comprising poly(ethylene/methyl acrylate/cyclohexene-methylacrylate) and an amount of a transition metal catalyst effective to catalyze oxygen scavenging.

194. A packaging article comprising poly(ethylene/methyl acrylate/cyclohexene-methylacrylate) and an amount of a transition metal catalyst effective to catalyze oxygen scavenging.